

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please CANCEL claims 1-3, 7-18 and 22-31 and AMEND claims 4-6 and 19-21 in accordance with the following:

1. (CANCELLED)

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4. (CURRENTLY AMENDED) ~~The optical receiver according to Claim 2, An optical receiver receiving wavelength division multiplexing signals in which signal lights with different signal bandwidths are wavelength-division multiplexed, the receiver having a demultiplexing unit demultiplexing the wavelength division multiplexing signals and outputting the demultiplexed signal lights from a plurality of output ports, wherein:~~

each output port has transmission characteristics settable such that a bandwidth of the transmission band in which the light is transmitted and a bandwidth of the non-transmission band in which the light is not transmitted are different, and the transmission band substantially matches the signal band of the signal lights that are output from the output port of the received wavelength division multiplexing signals, and

wherein said the wavelength division multiplexing signal further comprises includes a first signal light with a transmission bandwidth F1, and a second signal light with a transmission bandwidth F2, which are arrayed alternately with the frequency interval F (F≥(F1 + F2)/2),

said demultiplexing unit further comprisescomprising:

a first interleaver comprising a first port for having a first input port, inputting said the wavelength division multiplexing signals, and first and second output ports filtering and outputting, to the first output port, said the wavelength division multiplexing signals based on the transmission characteristics where the transmission band and the non-transmission band with the bandwidth 2F are alternately repeated, and a second port for filtering and outputting, to the

second output ports, said-the wavelength division multiplexing signals based on the opposite transmission characteristics from said first port opposite to the transmission characteristics for the first output port;

a second interleaver further comprising a third port for having a second input port inputting the signal lights output from said first output port, and third and fourth output ports, filtering and outputting to the third output port, the signal lights output from said the first output port based on the transmission characteristics where the transmission band and the non-transmission band with the bandwidth 2F are alternately repeated, and a fourth port for filtering and outputting to the fourth output port, the signal lights output from said the first output port based on the opposite transmission characteristics from said third port opposite to the transmission characteristics for the third output port; and

a third interleaver further comprising a fifth port for having a third input port inputting the signal lights output from said the second output port, and fifth and sixth output ports filtering and outputting, to the fifth output port, the signal lights output from said the second output port based on the transmission characteristics where the transmission band and the non-transmission band with the bandwidth 2F are alternately repeated, and a sixth port for filtering and outputting to the sixth output port, the signal lights output from said the second output port based on the opposite transmission characteristics opposite to the transmission characteristics for the from said-fifth output port;.

wherein the central frequency of the transmission bands of said-the first, second and third interleavers are shifted from the central frequency of the signal band of said-the first and second signal lights so that the overlapping portion of the transmission bands of said-the first and third output ports include includes the signal band of said-the second signal light, the overlapping portion of the transmission bands of said first and fourth output ports include includes the signal band of said-the first signal light, the overlapping portion of the transmission bands of said-the second and fifth ports include includes the signal band of said-the first signal lights, and the overlapping portion of the transmission bands of said-the second and sixth ports include includes the signal bands of said-the second signal lights.

5. (CURRENTLY AMENDED) The optical receiver according to Claim 4, wherein:
the central frequency of the transmission band of said first output port shifts F1/2 to the lower frequency side from the central frequency of the signal band of said second signal light, and

the central frequency of the transmission band of said third and fifth output ports shifts

F1/2 to the higher frequency side from the central frequency of the signal band of said second signal light.

6. (CURRENTLY AMENDED) The optical receiver according to Claim 4, wherein said demultiplexing unit further ~~comprises~~-includes a demultiplexer for demultiplexing signal lights that are output from said third to sixth output ports to signal lights with respective wavelengths.

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19. (CURRENTLY AMENDED) ~~The optical transmitter according to Claim 18, An~~

optical transmitter wavelength division multiplexing and transmitting a plurality of signal lights with different signal bandwidths, comprising:

a multiplexing unit having a plurality of input ports and filtering to multiplex a plurality of signal lights input from the plurality of input ports, respectively based on the transmission characteristics of each of the plurality of input ports, wherein said the plurality of signal lights comprises:

a first signal light group consisting of a plurality of signal lights each having a transmission bandwidth F1 and being arrayed with the frequency interval 4F;

a second signal light group ~~consisting~~ consisting of a plurality of signal lights each having transmission bandwidth F2 and being arrayed at the positions at frequency interval F ($F \geq (F_1 + F_2)/2$) from the central frequency of each signal light constituting said the first signal light group;

a third signal light group consisting of a plurality of signal lights each having transmission bandwidth F1 and being arrayed at the positions at frequency interval 2F from the central frequency of each signal light constituting said the first signal light group; and

a fourth signal light group consisting of a plurality of signal lights each having said transmission bandwidth F2 and being arrayed at positions at frequency interval 2F from the frequency of each signal light constituting said the second signal light group, said the multiplexing unit further comprises:

a first interleaver which further comprises a first port for inputting said the first signal light group with the transmission characteristics where in which the transmission band and the non-transmission band with the bandwidth F are alternately repeated, and a second port for inputting said the second signal light group with the opposite transmission characteristics from said the first port, and multiplexes and outputs said the first and second signal light groups which were input to said the first and second ports, respectively;

a second interleaver which further comprises a third port for inputting said the third signal light group with the transmission characteristics where the transmission band and the non-transmission band with the bandwidth F are alternately repeated, and a fourth port for inputting said the fourth signal light group with the opposite transmission characteristics from said the third port, and which multiplexes and outputs said the third and fourth signal light groups which were input to said the third and fourth ports; and

a third interleaver which further comprises a fifth port for inputting signal lights from said the first interleaver with the transmission characteristics where the transmission band and the

non-transmission band with the bandwidth F are alternately repeated, and a sixth port for inputting signal lights from said-the second interleaver with the opposite transmission characteristics from said-the fifth port, and which multiplexes and outputs the signal lights which were input to said-the fifth and sixth ports, and

wherein the central frequency-frequencies of the transmission bands of said-the first, second and third interleavers are shifted from the central frequency of each signal light of said-the first and second signal light groups so that the overlapping portion of the transmission bands of said-the first and fifth ports include-includes the signal band of each signal light of said-the first signal light group, the overlapping portion of the transmission bands of said-the second and fifth ports include-includes the signal band of each signal light of said-the second signal group, the overlapping portion of the transmission bands of said-the third and sixth ports include-includes the signal band of each signal light of said-the third signal light group, and the overlapping portion of the transmission bands of said-the fourth and sixth ports include-includes the signal band of each signal light of said-the fourth signal light group.

20. (CURRENTLY AMENDED) The optical transmitter according to Claim 19, wherein:

the central frequency of the transmission band of said-the first and fourth ports shift shifts $F1/2$ to the higher frequency side from the central frequency of each signal light of said-the second signal light group, and

the central frequency of the transmission band of said-the fifth port shifts $F1/2$ to the lower frequency side from the central frequency of the signal band of each signal light of said-the second signal light group.

21. (CURRENTLY AMENDED) The optical transmitter according to Claim 19, wherein:

said-the multiplexing unit further comprises:

a first multiplexer for multiplexing each signal light of said-the first signal light group, generating said-the first signal light group and inputting the same to said-the first port;

a second multiplexer for multiplexing each signal light of said-the second signal light group, generating said-the second signal light group, and inputting the same to said-the second port;

a third multiplexer for multiplexing each signal light of said-the third signal light group, generating said-the third signal light group, and inputting the same to said-the third port; and

a fourth multiplexer for-multiplexing each signal light of said-the fourth signal light group, generating said-the fourth signal light group, and inputting the same to said-the fourth port.

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